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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,016	06/30/2003	Kazutaka Shibata	AI 288	1927

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EXAMINER	
IM, JUNGHWA M	

ART UNIT	PAPER NUMBER
2811	

DATE MAILED: 02/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/608,016	SHIBATA, KAZUTAKA	
	Examiner	Art Unit	
	Junghwa M. Im	2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 February 2005*.

2a)☒ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-6 and 8-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-6 and 8-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *12/8/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Kazama et al. (US 6639315), hereinafter Kazama.

Regarding claim 1, Fig. 1 of Kazama shows a semiconductor device, comprising:

a semiconductor substrate (1);

at least one of a protruding electrode (9) and wiring (2, 7) formed on one surface of the semiconductor substrate; and

a first resin film (5) formed on the one surface of the semiconductor substrate,

wherein the first resin film has elasticity lower than 5 GPa so as to limit stress induced by a difference in thermal expansion coefficient between the semiconductor substrate and the first resin film (col. 5, , lines 21-28).

Claims 1, 3-4 and 13 are rejected under 35 U.S.C. 102(e) as being anticipated by Eguchi et al. (US 6627997), hereinafter Eguchi.

Regarding claim 1, Fig. 11E of Eguchi shows a semiconductor device, comprising:

a semiconductor substrate (1);

at least one of a protruding electrode (2) and wiring (inherent since the chip is connected to the circuit board 3 by the electrode 2) formed on one surface of the semiconductor substrate; and

a first resin film (5) formed on the one surface of the semiconductor substrate,

wherein the first resin film has elasticity than 5 GPa so as to limit stress induced by a difference in thermal expansion coefficient between the semiconductor substrate and the first resin film (elastic modulus of 500 MPa - 25Gpa; col. 6, , lines 15-32).

Regarding claims 3-4, Fig. 11E of Eguchi shows a semiconductor device, comprising:

a semiconductor substrate (1);

at least one of a protruding electrode (2) and wiring (inherent since the chip is connected to the circuit board 3 by the electrode 2) formed on one surface of the semiconductor substrate; and

a first resin film (5) formed on the one surface of the semiconductor substrate,

wherein the first resin film has elasticity lower enough to reduce stress induced by a difference in thermal expansion coefficient between the semiconductor substrate and the first resin film (elastic modulus of 500 MPa - 25Gpa; col. 6, , lines 15-32) and

a second resin film having one of higher and higher strength than the first resin film is formed on the other surface of the semiconductor device (elastic modulus of 17.5 GPa; col. 11, line 40-42).

Regarding claim 13, Fig. 11E of Eguchi shows that a second resin film having one of higher and higher strength than the first resin film is formed on the other surface of the semiconductor device (elastic modulus of 17.5 GPa; col. 11, line 40-42).

Claim 8-10 are rejected under 35 U.S.C. 102(e) as being anticipated by Wakamiya et al. (US Pat. Pub. 2002/0041013), hereinafter Wakamiya.

Regarding claim 8, Fig. 1 of Wakamiya shows semiconductor device, comprising:

a semiconductor chip (1);

an electrode pad (2) formed on the semiconductor chip;

a resin film (5) formed to cover a surface of the semiconductor chip; and

a post (4, 10) bonded to the electrode pad and provided to penetrate through the resin film, a portion (10) of which in close proximity to a junction portion with the electrode pad is made of gold (paragraph [0023]); and

a passivation layer (3) on the surface of the semiconductor chip, between the semiconductor chip and the resin film and covered by the resin film so as to have a passivation film/resin film interface therein, the gold portion of the post including a portion facing the passivation film/resin film.

Regarding claim 9, Fig. 1 of Wakamiya shows that the post includes a portion made of a metal material other than gold (paragraph [0023]).

Regarding claim 10, Fig. 1 of Wakamiya shows that the post includes a junction portion provided on a side of the electrode pad and made of gold, a tip end portion provided on a side of a tip end and made of gold and an intermediate portion provided between the junction and the tip end portion and made of a metal other than gold (paragraph [0021]).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eguchi.

Regarding claim 5, Fig. 11E of Eguchi shows substantially the entire claimed structure except "the semiconductor substrate has a thickness of 550 μm or less." However, it would have been obvious to one of ordinary skill in the art at the time of the invention made to have the semiconductor substrate with a thickness of 550 μm or less to reduce a package size, since it would have been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only in routine skill in the art. *In re Aller*, 105 USPQ 233.

Regarding claim 6, Fig. 11E of Eguchi shows substantially the entire claimed structure including that the semiconductor substrate is placed at a center of the semiconductor except "the semiconductor substrate has a thickness of 200 μm or less." However, it would have been obvious to one of ordinary skill in the art at the time of the invention made to have the semiconductor substrate with a thickness of 200 μm or less to reduce a package size, since it would have been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only in routine skill in the art. *In re Aller*, 105 USPQ 233.

Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wakamiya in view of Shieh et al. (US Pat. Pub. 2002/0056741), hereinafter Shieh.

Regarding claim 11, Fig. 1 of Wakamiya shows most aspect of the instant invention including the passivation layer has a thickness greater that a thickness of the electrode pad, however, fails to show that "the gold portion of the post projects below a surface of passivation layer at the passivation film/resin film interface into direct contact with the electrode pad." Fig. 9a of Shieh shows a lower portion of a gold post (61) projects below a surface of passivation layer (12) at the passivation film/resin film interface into direct contact with the electrode pad (11).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Shieh into the device of Wakamiya in order to have a lower portion of a gold post projecting below a surface of passivation layer at the passivation film/resin film interface into direct contact with the electrode pad for easier soldering to the pad.

Regarding claim 12, Fig. 1 of Wakamiya shows most aspect of the instant invention including the passivation layer has a thickness greater that a thickness of the electrode pad, however, fails to show that "the gold portion of the post projects below a surface of passivation layer at the passivation film/resin film interface into confrontation with the electrode pad." Fig. 9a of Shieh shows a lower portion of a gold post (61) projects below a surface of passivation layer (12) at the passivation film/resin film interface into confrontation with the electrode pad (11).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Shieh into the device of Wakamiya in order to have a lower portion of a gold post projecting below a surface of passivation layer at the passivation film/resin film interface into confrontation with the electrode pad for easier soldering to the pad.

Response to Arguments

Applicant's arguments with respect to pending claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

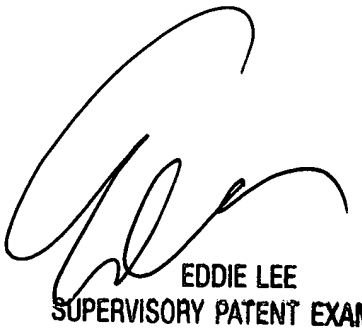
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Junghwa M. Im whose telephone number is (571) 272-1655. The examiner can normally be reached on MON.-FRI. 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on (571) 272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

jmi



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